

REMARKS

Claims 14, 15, 19 and 29 have been canceled, without prejudice, claims 31 to 40 have been added, and therefore claims 13, 16 to 18, 20 to 28, and 30 to 40 are currently pending.

Applicants respectfully request reconsideration of the present application in view of this Amendment.

The assertions made in the Advisory Action are first addressed. The Office appears to be merging separate rejections. In the response to the Final Office Action of August 21st, Applicants addressed the anticipation rejections of claims 13, 14, 16 to 19, 21 and 25 based on the Rosnowski reference by explaining that it did not identically disclose the feature of heating a semiconductor wafer to a high temperature of at least 1200 degrees centigrade while a glass layer is applied so that the dopant from the solid glass layer penetrates into the semiconductor wafer to produce the at least one doped region. The Advisory Action states that the recited high-temperature feature was addressed in the obviousness rejections of claims 20, 23, 24, 29 and 30 for which a combination of references was relied upon. This assertion is not understood because claims 13, 14, 16 to 19, 21 and 25 were rejected for anticipation based on the Rosnowski reference -- and not for obviousness based on a combination including secondary and tertiary references. Thus, the Office's assertion that the obviousness rejections disclose the high-temperature feature suggests that the anticipation rejections do not disclose this feature, so that Rosnowski does not identically disclose (or even suggest) each of the features of these claims.

Furthermore, the assertion in the Advisory Action with respect to Applicants' discussion concerning the Schwalke reference is also not understood. In the prior response, it was explained that the obviousness rejections of claims 15, 22 and 28 are not sustainable because Rosnowski and Schwalke do not disclose the feature of heating the semiconductor wafer to a high temperature of at least 1200 degrees centigrade while the glass layer is applied so that the dopant from the solid glass layer penetrates into the semiconductor wafer to produce the at least one doped region. The fact that the Schwalke reference was relied upon in the Final Office Action for another purpose is irrelevant and

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only further indicates that Schwalke does not cure the critical deficiencies of the primary Rosnowski reference with respect to the recited high-temperature feature.

In this regard, even if the Office Action is asserting that the Weijland reference discloses this feature, the rejections of claims 15, 22 and 28 remain inadequate because the rejections rely solely on Rosnowski and Schwalke and make no reference to the Weijland reference. Thus, the Office is apparently asserting that a particular reference asserted in one rejection also applies to a separate rejection that does not rely on this reference, which is believed to be inconsistent with patent examination procedure.

It is therefore submitted that contrary to the assertions in the Advisory Action, the explanations provided herein do address the rejections asserted in the Final Office Action and make plain that the pending claims are allowable.

On page two (2) of the Final Office Action, claims 13, 14, 16 to 19, 21 and 25 were rejected under 35 U.S.C. §102(b) as anticipated by Rosnowski, U.S. Patent No. 4,099,997 (Rosnowski).

As regards the anticipation rejections of the claims, to reject a claim under 35 U.S.C. § 102(b), the Office must demonstrate that each and every claim feature is identically described or contained in a single prior art reference. (*See Scripps Clinic & Research Foundation v. Genentech, Inc.*, 18 U.S.P.Q.2d 1001, 1010 (Fed. Cir. 1991)). Still further, not only must each of the claim features be identically described, an anticipatory reference must also enable a person having ordinary skill in the art to practice the claimed invention, namely the claimed subject matter of the claims, as discussed herein. (*See Akzo, N.V. v. U.S.I.T.C.*, 1 U.S.P.Q.2d 1241, 1245 (Fed. Cir. 1986)).

As further regards the anticipation rejections, to the extent that the Office may be relying on the inherency doctrine, it is respectfully submitted that to rely on inherency, the Examiner must provide a “basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristics *necessarily* flows from the teachings of the applied art.” (*See* M.P.E.P. § 2112; emphasis in original; and *see Ex parte Levy*, 17 U.S.P.Q.2d 1461, 1464 (Bd. Pat. App. & Int’f. 1990)). Thus, the M.P.E.P. and the case law make clear that simply because a certain result or characteristic may occur in the prior art does not establish the inherency of that result or characteristic.

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Accordingly, it is respectfully submitted that any anticipation rejection premised on the inherency doctrine must fail absent the foregoing conditions.

While the rejections may not be agreed with (in view of the above, for example), to facilitate matters, independent claim 13 now provides that the semiconductor wafer is heated to a high temperature of at least 1200 degrees centigrade while the glass layer is applied so that the dopant from the solid glass layer penetrates into the semiconductor wafer to produce the at least one doped region. As Rosnowski merely refers to annealing borosilicate glass layers on either side of silicon dioxide at 900 degrees Celsius, Rosnowski does not identically describe (or even suggest) each of the features of claim 13 as presented.

For at least these reasons, it is respectfully submitted that Rosnowski does not anticipate claim 13 as presented, or its dependent claims 16 to 18, 21 and 25.

On page three (3) of the Final Office Action, claims 15, 22 and 28 were rejected under 35 U.S.C. § 103(a) as unpatentable over Rosnowski in view of Schwalke, U.S. Patent No. 5,496,765 (Schwalke).

Claim 15 has been canceled, without prejudice, and claims 22 and 28 depend from and incorporate the features of independent claim 13 as presented. As the secondary Schwalke does not disclose or even suggest heating the semiconductor wafer to a high temperature of at least 1200 degrees centigrade so that the dopant from the solid glass layer penetrates into the semiconductor wafer as recited in the context of claim 13, it is respectfully submitted that it does not cure the critical deficiencies of the primary Rosnowski reference discussed above. Therefore, the references relied upon do not disclose or suggest each of the features of claims 22 and 28 as required. For at least this reason, it is respectfully submitted that the obviousness rejections of claims 22 and 28 should be withdrawn.

On page four (4) of the Final Office Action, claims 20, 23, 24, 29 and 30 were rejected under 35 U.S.C. § 103(a) as unpatentable over Rosnowski and in view of Evans Jr. et al., U.S. Patent No. 4,104,091 (Evans) and Weijland, U.S. Patent No. 3,907,615 (Weijland).

Independent claim 13 now provides that the applying of the solid glass layer is performed in accordance with a chemical vapor deposition at atmospheric pressure. Since

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none of Rosnowski, Evans or Weijland, whether taken alone or combined, disclose or suggest the feature of applying the solid glass layer by chemical vapor deposition at atmospheric pressure, it is respectfully submitted that claim 13 as presented is allowable.

Additionally, while the Schwalke reference was cited with regard to the rejection of claim 15 (the subject matter of which has been incorporated into claim 13), Schwalke does not disclose or suggest in any way that atmospheric pressure chemical vapor deposition (APCVD) would be advantageous in the context of applying a solid glass layer for diffusion doping as recited in the context of the claim. In contrast, the specification of the present application clearly explains that APCVD is useful in this context to "achieve extremely high dopant concentrations which reach up to the solubility limit of the silicon wafer." (See Specification, page 1, line 27 to page 2, line 1). The Schwalke reference provides no such motivation, but merely states, without any further explanation, that an occupation layer of doped glass is deposited using APCVD. (Schwalke, col. 4, lines 26 to 28).

Additionally, the motivation, as asserted in the Final Office Action, that those of skill in the art would have combined Schwalke with Rosnowski to "avoid an uncontrolled drive-out" from these layers, is not sustainable since there is no indication that the primary reference (or any of the other references) suffer at all from this technical problem. Since none of Schwalke, the other references relied upon, or the knowledge of those skilled in the art provide any suggestion for applying APCVD in the context of the claimed method -- which is instead supplied solely by disclosure of the present application -- it is respectfully submitted that there would be no motivation to combine Schwalke with the Rosnowski, Evans and Weijland references.

For at least these reasons, it is submitted that claims 20, 23, 24, 29 and 30 are allowable over the references relied upon.

On page five (5) of the Final Office Action, claims 26 and 27 were rejected under 35 U.S.C. § 103(a) as unpatentable over Rosnowski in view of Shinohara, JP 59-80928.

The Shinohara reference purportedly refers to forming a non-doped glass layer over a doped substrate. It is respectfully submitted, however, that any review of the Shinohara reference makes plain that it simply does not disclose or suggest the feature of heating the semiconductor wafer to at least 1200 degrees centigrade so that the dopant

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from the solid glass layer penetrates into the semiconductor wafer as recited in the context of claim 13 as presented. Accordingly, it does not cure the critical deficiencies of the primary Rosnowski reference. It is therefore respectfully submitted that claims 26 and 27 are allowable over the references relied upon.

As further regards all of the obviousness rejections, to reject a claim as obvious under 35 U.S.C. § 103, the prior art must disclose or suggest each claim element and it must also provide a motivation or suggestion for combining the elements in the manner contemplated by the claim. (See Northern Telecom, Inc. v. Datapoint Corp., 908 F.2d 931, 934 (Fed. Cir. 1990), cert. denied, 111 S. Ct. 296 (1990); In re Bond, 910 F.2d 831, 834 (Fed. Cir. 1990)). Thus, the “problem confronted by the inventor must be considered in determining whether it would have been obvious to combine the references in order to solve the problem”, Diversitech Corp. v. Century Steps, Inc., 850 F.2d 675, 679 (Fed. Cir. 1998). The prior art simply does not address the problems addressed herein that are met by the subject matter of any of the rejected claims.

The cases of In re Fine, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988), and In re Jones, 21 U.S.P.Q.2d 1941 (Fed. Cir. 1992), also make plain that the Final Office Action’s assertions that it would have been obvious to modify the reference relied upon does not properly support a § 103 rejection. It is respectfully suggested that those cases make plain that the Final Office Action reflects a subjective “obvious to try” standard, and therefore does not reflect the proper evidence to support an obviousness rejection based on the references relied upon. In particular, the Court in the case of In re Fine stated that:

Instead, the Examiner relies on hindsight in reaching his obviousness determination. . . . **One cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention.**

In re Fine, 5 U.S.P.Q.2d at 1600 (citations omitted; emphasis added). Likewise, the Court in the case of In re Jones stated that:

Before the PTO may combine the disclosures of two or more prior art references in order to establish *prima facie* obviousness, there must be some suggestion for doing so, found either in the references themselves or in the

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knowledge generally available to one of ordinary skill in the art. . . .

Conspicuously missing from this record is any evidence, other than the PTO's speculation (if it be called evidence) that one of ordinary skill . . . would have been motivated to make the modifications . . . necessary to arrive at the claimed [invention].

In re Jones, 21 U.S.P.Q.2d at 1943 & 1944 (citations omitted; italics in original).

That is exactly the case here since it is respectfully submitted that the Final Office Action reflects hindsight, reconstruction and speculation, which these cases have indicated does not constitute evidence that will support a proper obviousness finding.

More recently, the Federal Circuit in the case of In re Kotzab has made plain that even if a claim concerns a “technologically simple concept” -- which is not even the case here, there still must be some finding as to the “specific understanding or principle within the knowledge of a skilled artisan” that would motivate a person having no knowledge of the claimed subject matter to “make the combination in the manner claimed”, stating that:

In this case, the Examiner and the Board fell into the hindsight trap. The idea of a single sensor controlling multiple valves, as opposed to multiple sensors controlling multiple valves, is a technologically simple concept. *With this simple concept in mind, the Patent and Trademark Office found prior art statements that in the abstract appeared to suggest the claimed limitation. But, there was no finding as to the specific understanding or principle within the knowledge of a skilled artisan that would have motivated one with no knowledge of Kotzab's invention to make the combination in the manner claimed.* In light of our holding of the absence of a motivation to combine the teachings in Evans, we conclude that the Board did not make out a proper *prima facie* case of obviousness in rejecting [the] claims . . . under 35 U.S.C. Section 103(a) over Evans.

(See In re Kotzab, 55 U.S.P.Q.2d 1313, 1318 (Federal Circuit 2000) (italics added)).

Here again, there have been no such findings to establish that the features discussed above of the rejected claims are met by the references relied upon. As referred to above, any

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review of the references, whether taken alone or combined, makes plain that they simply do not describe the features discussed above of the rejected claims.

More recent still, in the case of *In re Lee*, 61 U.S.P.Q.2d 1430, 1433-35 (Fed. Cir. 2002), the Court reversed the Board of Appeals for relying on conclusory statements, stating the following:

With respect to Lee's application, neither the examiner nor the Board adequately supported the selection and combination of the Nortrup and Thunderchopper references to render obvious that which Lee described. The examiner's conclusory statements that "the demonstration mode is just a programmable feature which can be used in many different device[s] for providing automatic introduction by adding the proper programming software" and that "another motivation would be that the automatic demonstration mode is user friendly and it functions as a tutorial" do not adequately address the issue of motivation to combine. This factual question of motivation is material to patentability, and could not be resolved on subjective belief and unknown authority. It is improper, in determining whether a person of ordinary skill would have been led to this combination of references, simply to "[use] that which the inventor taught against its teacher." Thus the Board must not only assure that the requisite findings are made, based on evidence of record, but must also explain the reasoning by which the findings are deemed to support the agency's conclusion.

....

In its decision on Lee's patent application, the Board rejected the need for "any specific hint or suggestion in a particular reference" to support the combination of the Nortrup and Thunderchopper references. Omission of a relevant factor required by precedent is both legal error and arbitrary agency action.

[The] "common knowledge and common sense" on which the Board relied in rejecting Lee's application are not the specialized knowledge and expertise contemplated by the Administrative Procedure Act. Conclusory statements such as those here provided do not fulfill the agency's obligation. [The] Board's findings must extend to all material facts and must be documented on the record, lest

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the "haze of so-called expertise" acquire insulation from accountability. "Common knowledge and common sense," even if assumed to derive from the agency's expertise, do not substitute for authority when the law requires authority.

Thus, the proper evidence of obviousness must show why there is a suggestion to combine the references so as to provide the subject matter of the claims and its benefits.

Accordingly, claims 13, 16 to 18, 20 to 28, and 30 are allowable for all of the above reasons.

New claims 31 and 40 do not add any new matter and are supported in the specification. New claims 31 to 35 include features analogous to those in claim 13 as presented, and are therefore allowable at least for the same reasons as claim 13. New claims 36 to 40 also include features analogous to those in claim 13 and, in addition, include the feature that the chemical vapor deposition employs a tetra-ethyl-ortho-silicate gas which is not disclosed or suggested by any of the references relied upon, and are therefore allowable at least for the same reasons as claim 13.

It is therefore respectfully submitted that claims 13, 16 to 18, 20 to 28, and 30 to 40 are allowable.

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CONCLUSION

In view of all the above, it is believed that rejections of the claims have been obviated, and that claims 13, 16 to 18, 20 to 28, and 30 to 40 are allowable. It is therefore respectfully requested that the rejections be reconsidered and withdrawn, and that the present application issue as early as possible.

Respectfully submitted,
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